

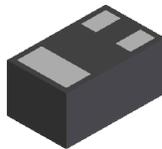
Features

- $BV_{CEO} > 40V$
- $I_C = 500mA$ High Collector Current
- $I_{CM} = 1A$ Peak Pulse Current
- $P_D = 100mW$ Power Dissipation
- Low Collector-Emitter Saturation Voltage, $V_{CE(sat)}$
- $0.60mm^2$ Package Footprint, 13 times Smaller than SOT23
- $0.5mm$ Height Package Minimizing Off-Board Profile
- Complementary NPN Type DSS3540M
- **Totally Lead Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

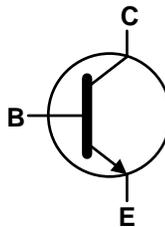
Mechanical Data

- Case: X1-DFN1006-3
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — NiPdAu. Solderable per MIL-STD-202, Method 208 ④
- Weight: 0.0009 grams (Approximate)

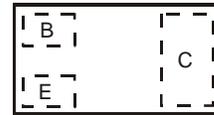
X1-DFN1006-3



Bottom View



Device Symbol


 Top View
Device Schematic

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DSS2540M-7	TC	7	8mm	3,000
DSS2540M-7B	TC	7	8mm	10,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information

DSS2540M-7	<p>Top View Dot Denotes Collector Side</p>	<p>From date code 1527 (YYWW), this changes to:</p> <p>Top View Bar Denotes Base and Emitter Side</p>
DSS2540M-7B	<p>Top View Bar Denotes Base and Emitter Side</p>	<p>TC = Product Type Marking Code</p>

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	40	V
Collector-Emitter Voltage	V _{CEO}	40	V
Emitter-Base Voltage	V _{EBO}	6	V
Collector Current - Continuous	I _C	500	mA
Peak Pulse Collector Current	I _{CM}	1	A
Peak Base Current	I _{BM}	100	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

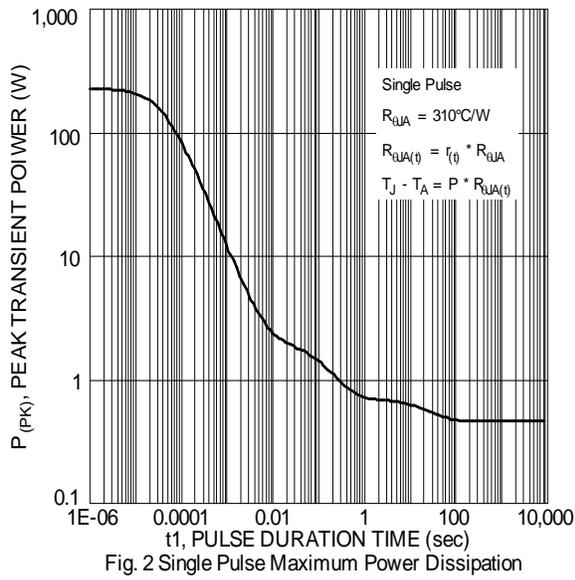
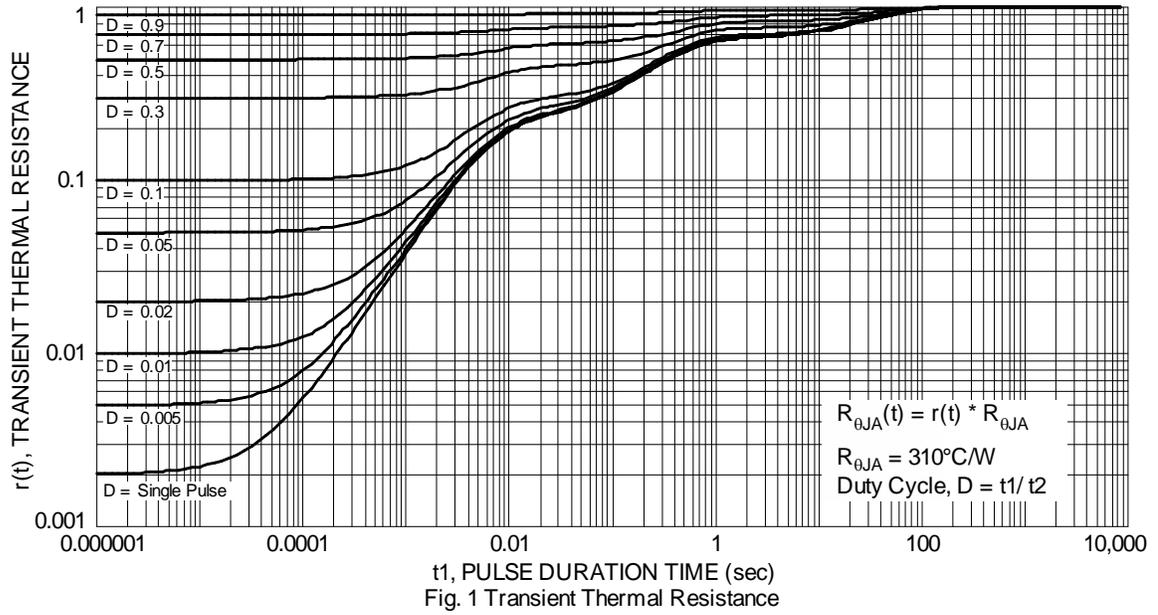
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5) 400	mW
		(Note 6) 1000	
Thermal Resistance, Junction to Ambient	R _{θJA}	(Note 5) 310	°C/W
		(Note 6) 120	
Thermal Resistance, Junction to Lead	R _{θJL}	120	°C/W
Operating and Storage and Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 8)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	B

- Notes:
- For the device mounted on minimum recommended pad layout 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition. The entire exposed collector pad is attached to the heatsink.
 - Same as Note 5, except the exposed collector pad is mounted on 25mm x 25mm 2oz copper.
 - Thermal resistance from junction to solder-point (on the exposed collector pad).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics



Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV _{CBO}	40	—	—	V	I _C = 100μA, I _E = 0
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	40	—	—	V	I _C = 10mA, I _B = 0
Emitter-Base Breakdown Voltage	BV _{EBO}	6	—	—	V	I _E = 100μA, I _C = 0
Collector Cutoff Current	I _{CBO}	—	—	100 50	nA μA	V _{CB} = 30V, I _E = 0 V _{CB} = 30V, I _E = 0, T _A = +150°C
Emitter Cutoff Current	I _{EBO}	—	—	100	nA	V _{EB} = 5V, I _C = 0
ON CHARACTERISTICS (Note 9)						
DC Current Gain	h _{FE}	200 150 50	— — —	— — —	—	V _{CE} = 2V, I _C = 10mA V _{CE} = 2V, I _C = 100mA V _{CE} = 2V, I _C = 500mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}	— — — —	— — — —	50 100 200 250	mV	I _C = 10mA, I _B = 0.5mA I _C = 100mA, I _B = 5mA I _C = 200mA, I _B = 10mA I _C = 500mA, I _B = 50mA
Collector-Emitter Saturation Resistance	R _{CE(sat)}	—	—	500	mΩ	I _C = 500mA, I _B = 50mA
Base-Emitter Saturation Voltage	V _{BE(sat)}	—	—	1.2	V	I _C = 500mA, I _B = 50mA
Base-Emitter Turn On Voltage	V _{BE(on)}	—	—	1.1	V	V _{CE} = 2V, I _C = 100mA
SMALL SIGNAL CHARACTERISTICS						
Output Capacitance	C _{obo}	—	—	6	pF	V _{CB} = 10V, f = 1.0MHz
Current Gain-Bandwidth Product	f _T	250	300	—	MHz	V _{CE} = 5V, I _C = 100mA, f = 100MHz

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

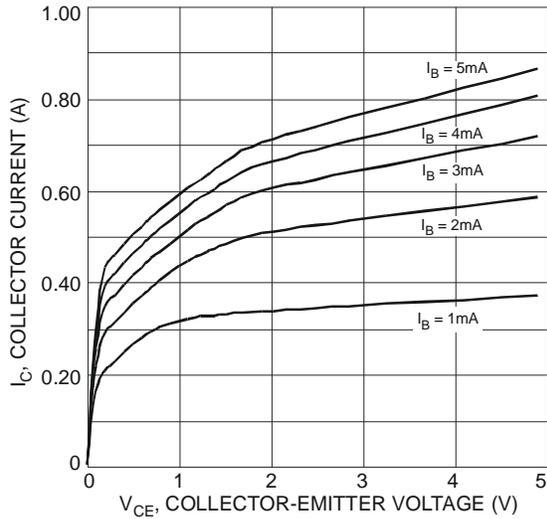


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

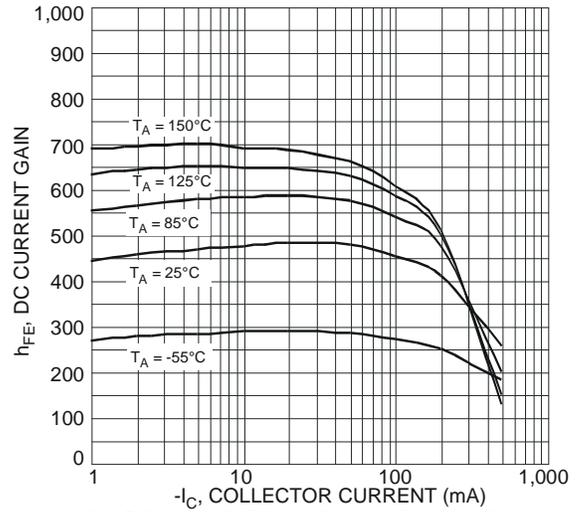


Fig. 5 Typical DC Current Gain vs. Collector Current

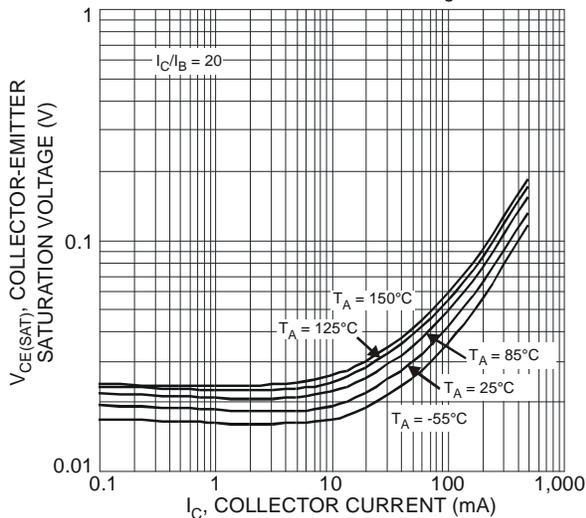


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

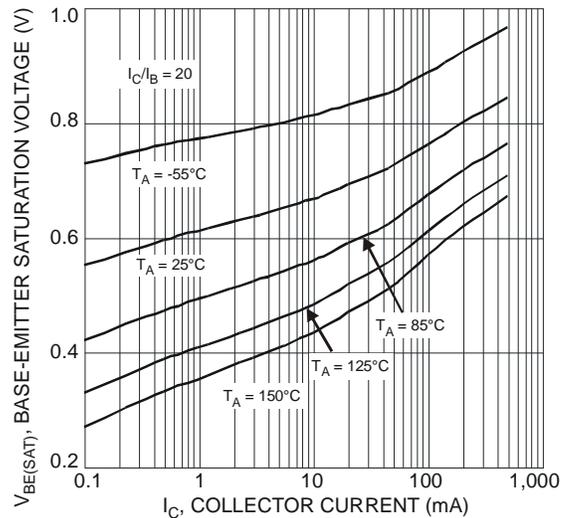


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

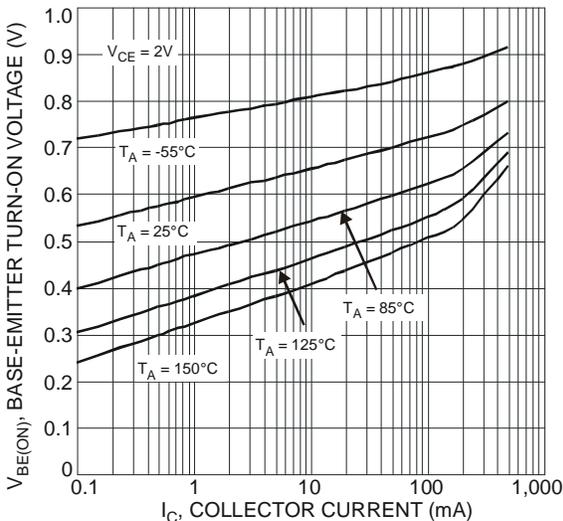


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

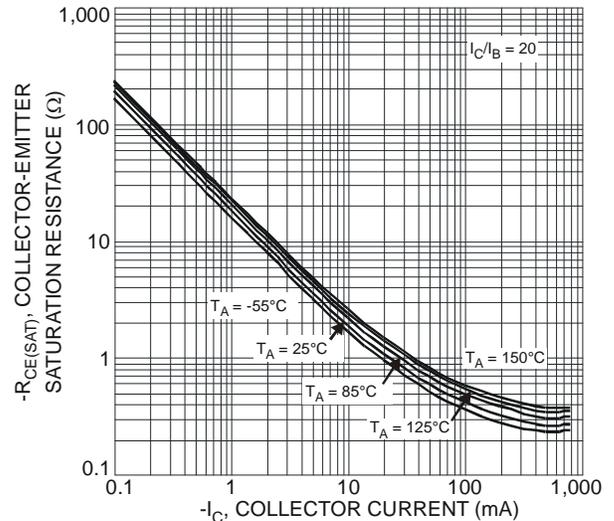
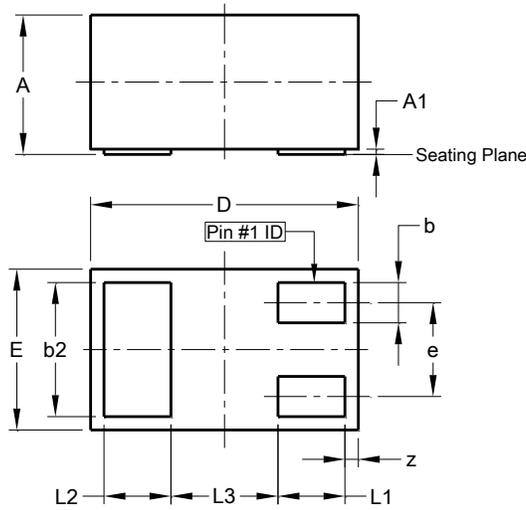


Fig. 9 Typical Collector-Emitter Saturation Resistance vs. Collector Current

Package Outline Dimensions

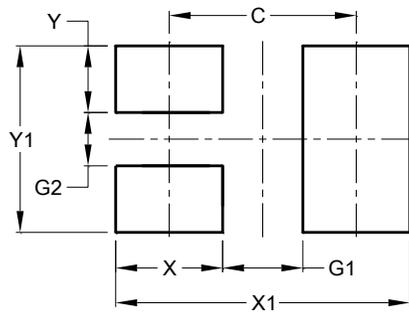
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



X1-DFN1006-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0.00	0.05	0.03
b	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	-	-	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	-	-	0.40
z	0.02	0.08	0.05
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
C	0.70
G1	0.30
G2	0.20
X	0.40
X1	1.10
Y	0.25
Y1	0.70

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